

REMARKS

The Examiner stated that claim 2 would be allowable if rewritten in independent form including all of the limitations of the base claim. Claim 2 has been re-written into independent form as new claim 17 as suggested by the Examiner. Therefore, new claim 17 is in condition for allowance.

Claims 1 and 3-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando et al. (U.S. Patent No. 6,461,769) in view of JP 2001-085065 ('065).

Applicants amended claims 1, 15 and 16 to require, with respect to the through-holes of the electrode current collector, that "at least part thereof is filled with the conductive material(s)." The filling of the through-holes of the current collector with a conductive material is shown in FIG. 6, which is a cross section of the through-holes in FIG. 5 taken along line I-I'. The through-holes of positive electrode current collector 1a and negative electrode current collector 2a are blocked or filled with conductive materials 1b and 2b. This blocking or filling is also described in the specification, for example, on page 15, lines 15-20. The advantage of filling the through-holes of the current collector with conductive material is, among other things, that lithium ions can move freely between the electrodes, the tensile strength of the electrode substrate is increased thereby permitting a thinner electrode current collector, and a reduction in the number of failures of the electrodes through short circuits. The result of these advantages is a higher energy density and higher power density for the energy storage device.

As recognized by the Examiner on page 4 of the 5/7/07 Office Action, the Ando reference does not disclose "a conductive layer made of a conductive material on the electrode substrate." Further, the Ando reference does not disclose that the through-holes of the electrode current collector are filled with conductive material. The Examiner stated that the '065 reference "teaches that forming a 2 μ m thick adhesion layers that contain a conductive agent interposed between porous collectors and electrode layers improve the adhesion between the collectors and electrodes" and combined the '065 reference with Ando to reject the pending claims. However, the adhesion layer of the '065 reference does not fill the electrode current collector through-holes, but

rather is only an adhesion layer between the collectors and electrodes. The '065 reference also does not disclose the advantage gained by filling or blocking the through-holes such as, among other things, a greater tensile strength permitting a thinner electrode current collector thereby resulting in a higher energy and power density. Thus, the combination of the Ando reference and the '065 reference does not disclose or suggest all of the limitations of amended claims 1 and 3-16.

Claims 1 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of JP 11-162787 ('787), and Claim 11 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ando in view of the '065 reference and WO 2000/11688 ('688). Neither the '787 reference nor the ''688 reference disclose filling of the electrode current collector through-holes with a conductive material, nor the advantages and results disclosed in the specification for doing so. Therefore, the combination of these references do not disclose or suggest all of the limitations of Claims 1, 5 and 11.

CONCLUSION

Applicant respectfully submits that the amended claims are patentable over the prior art and requests allowance of the pending claims.

Dated:

Respectfully submitted,



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